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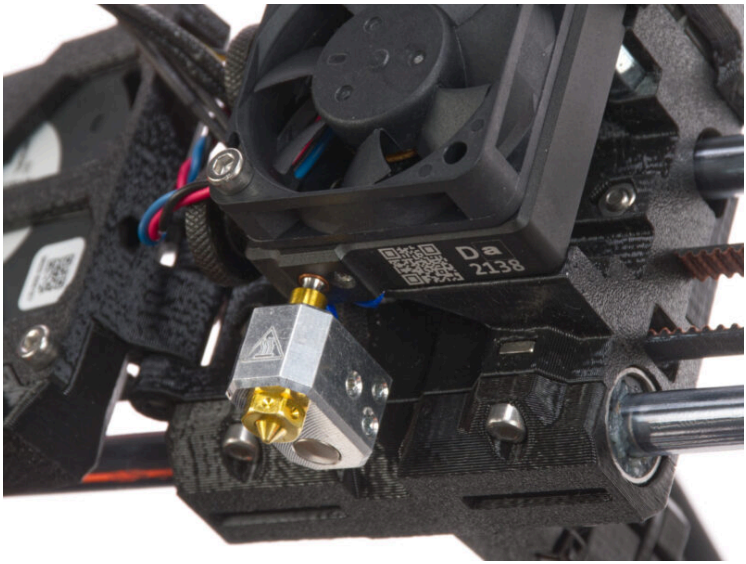
How to replace the Prusa Nozzle (MK4/MK3.9)



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STEP 1 Introduction

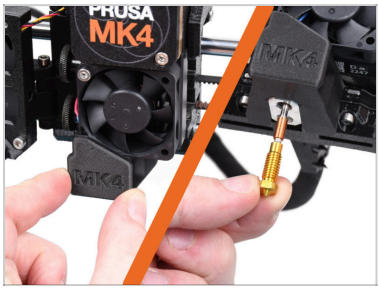
- This guide will take you through the replacement of the **Prusa Nozzle** on the **Original Prusa MK4** and **MK3.9**.

ⓘ The following instructions are compatible with all Prusa Nozzle diameters.

- All necessary parts are available in our eshop prusa3d.com.

ⓘ Note that you have to be logged in to have access to the spare parts section.

STEP 2 Nozzle Replacement Tool



Recommendation: There is an alternative nozzle replacement method that **requires using a printed replacement tool**. This approach is quicker and simpler, allowing you to replace the nozzle directly on the printer.

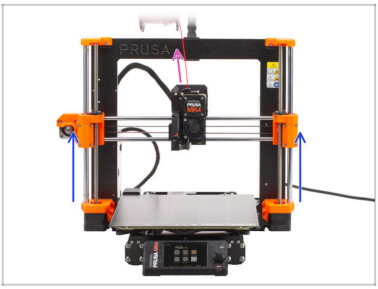
⚠ **This method requires printing the Nozzle Replacement Tool.** If you do not have the possibility to print the tool, follow the instructions in the next steps.

- The Nozzle Replacement Tool part is available for download on Printables.com.
  - After printing the part, **follow the quick guide or video tutorial on the same Printables page.**

STEP 3 Tools necessary for this chapter

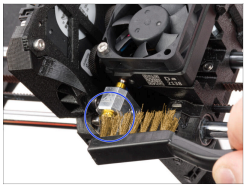
- **For this chapter, please prepare:**
- Wrench 13-16
- Universal wrench
- Cloth or piece of fabric 15x15 cm *to protect the heatbed*
- Small brass brush *for cleaning the nozzle*

STEP 4 Preparing the printer



- Unload the filament from the printer.
  - ⓘ It's recommended to take off the spool holder from the printer.
- Move the Z-axis to the center position to easily access the extruder from the top and bottom.

STEP 5 Cleaning the hotend



⚠ **WARNING: The hotend and heatbed are very HOT. Do not touch these parts!!!**

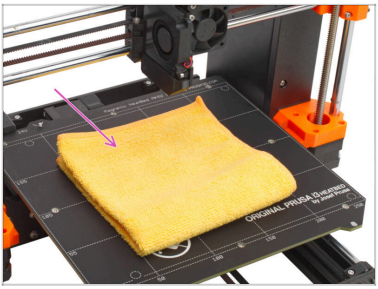
- For the following steps, it is necessary to have the heaterblock and the hotend clean from the remains of the filament. Otherwise, it can be difficult to release the nozzle.

⚠ If you have a Prusa hotend sock on the hotend, remove it.

- On the printer screen, go to *Control -> Temperature -> Nozzle Temperature* and using the knob set **250°C**.
- Wait at least 5 minutes. The remains of the filament must be warmed up slightly so that they can be removed more easily.
- Using the brass brush, carefully clean the heaterblock and the hotend from the filament residue. **Avoid contact of the brush with the hotend cables, as this could cause a short circuit.**
- When the heaterblock and the hotend are perfectly clean, cool down the printer. On the screen, navigate to *Preheat -> Cooldown*.

⚠ **Wait until the hot parts are cooled down** to ambient temperature. It takes approximately 10 minutes.

STEP 6 Protecting the heatbed



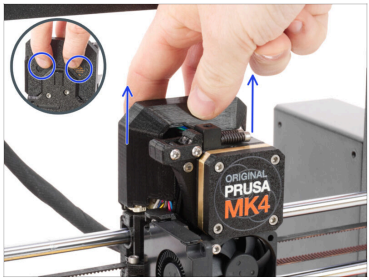
- Turn the printer OFF and unplug the power cable from the PSU (Power Supply Unit).

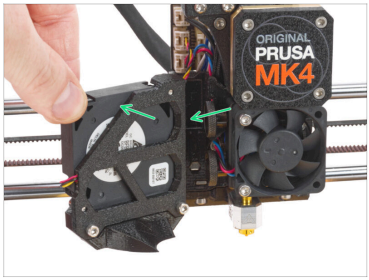
⚠ **Make sure the printer parts - print head and heatbed are cooled down at room temperature.**

⚠ Before proceeding any further, it is recommended to **protect the heatbed first!**

- Take off the flexible steel sheet.
- Use any cloth or piece of fabric, which is thick enough and cover the heatbed. This will ensure you won't damage (scratch) the surface during the disassembly.

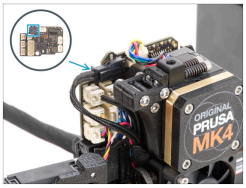
STEP 7 Accessing the hotend cables

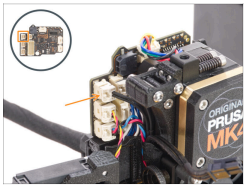


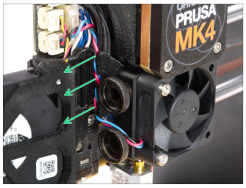


- Slide the Loveboard-cover up and remove it from the extruder. There are two cutouts on the back of the part, which you can grab for easier removal.
- Open the fan-door widely.

STEP 8 Disconnecting the hotend cables



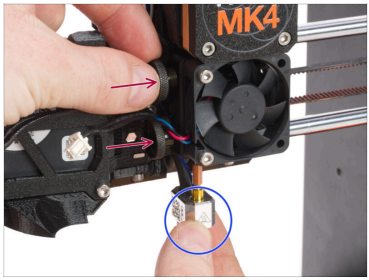


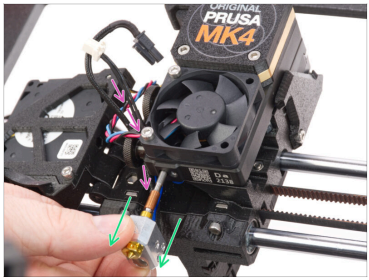


⚠ Each connector has a safety latch. **It is necessary to press the latch before disconnecting.** Otherwise, the connector may get damaged.

- Disconnect the hotend heater cable.
- Disconnect the hotend thermistor cable.
- Remove the heatsink fan cable, hotend thermistor, and hotend heater cables from the cable channel and leave them free for now.

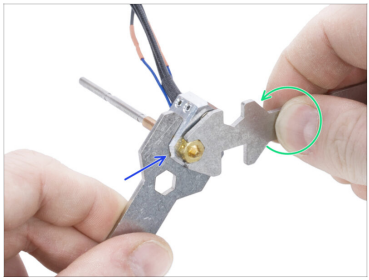
STEP 9 Removing the hotend

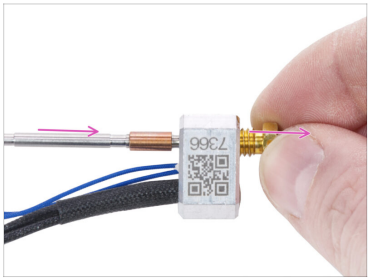




- Grasp the hotend with your hand.
- Use your other hand to loosen the two thumb screws. **There is no need to remove them completely**, a few turns are enough.
- Slide out the hotend assembly from the heatsink.
- At the same time push the hotend cables behind the heatsink out of the extruder.

STEP 10 Removing the Prusa Nozzle





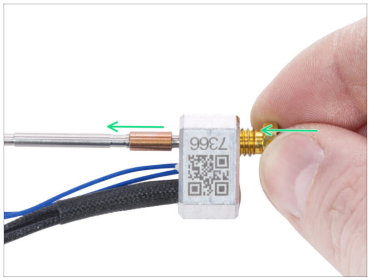
- Using the wrench 13-16 grasp the heaterblock.
- Using the 7mm cutout in the universal wrench, grasp the nozzle and loosen it.
- Manually release and remove the Prusa nozzle from the hotend assembly.

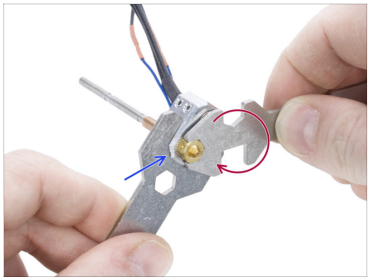
STEP 11 Installing the Prusa Nozzle: parts preparation

- **For the following steps, please prepare:**
- New Prusa Nozzle (1x)

  ⓘ See the Different Nozzle Types article for more info on the available options.

STEP 12 Installing the Prusa Nozzle

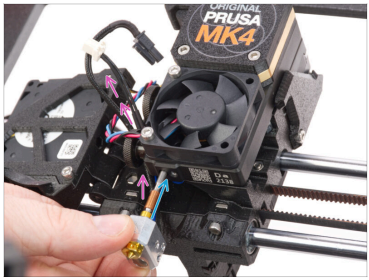


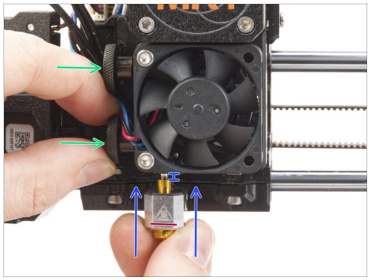


- Screw the new nozzle all the way into the heaterblock until the nozzle touches the heaterblock surface.
- Grasp the heaterblock with the wrench 13-16.
- Using the 7mm cutout in the universal wrench, tighten the nozzle against the heaterblock. **Do not use any extra force!**

  ⓘ The specified torque value is 1.5 Nm (13.3 lb-in). The use of a torque wrench is recommended.

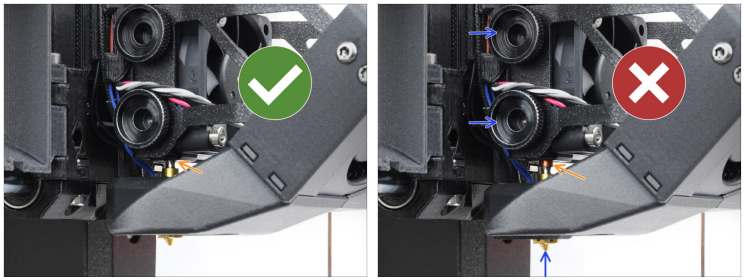
STEP 13 Inserting the hotend





- Locate the hole in the heatsink from the bottom of the extruder and insert the hotend into the heatsink.
- At the same time, push the hotend cable behind the heatsink fan up to the electronics.
- Push the hotend assembly all the way into the heatsink. There should be approximately a 2 mm gap between the heatsink and the brass part of the nozzle.
- Orient the hotend assembly so that the HOT symbol on the heaterblock faces forward.
- While pushing the hotend assembly in, firmly tighten the lower thumb screw and the upper thumb screw. **Avoid pinching any cable between the screws and the heatsink!**

STEP 14 Nozzle insertion check

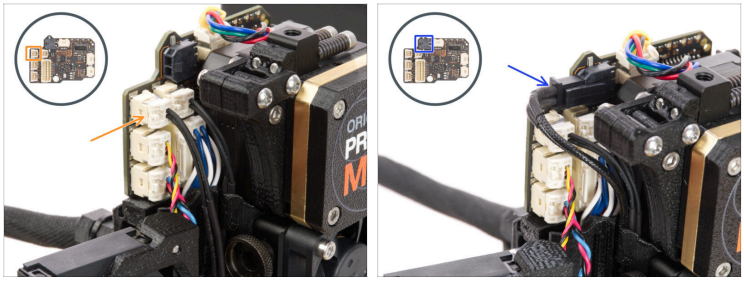


- Verify that the nozzle is fully inserted. The copper ring on the nozzle should not be visible if it's properly seated.

  ⓘ If not fully inserted, poor heat transfer may occur, potentially leading to issues like nozzle clogs.

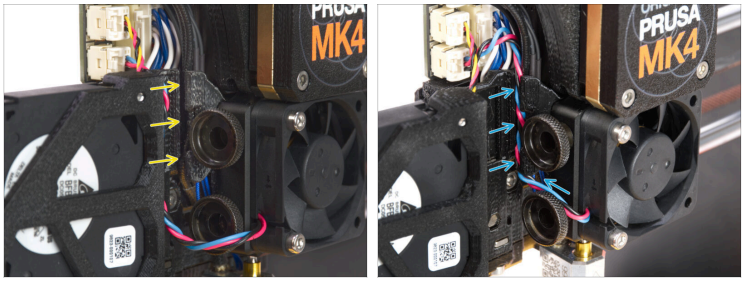
  - To adjust the nozzle position, loosen the thumbscrews, reposition the nozzle, and then retighten the screws, while pushing the hotend assembly up.

STEP 15 Connecting the hotend



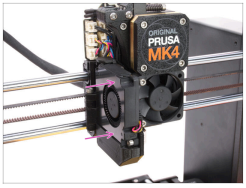
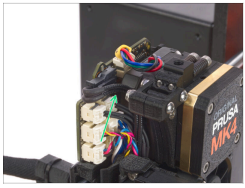
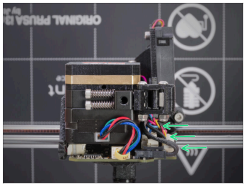
- Connect the hotend thermistor to the top left slot on the LoveBoard.
- Connect the hotend heater to the black slot on the upper part of the LoveBoard.

STEP 16 Guiding the hotend cables



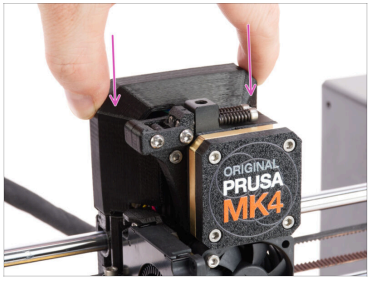
- Locate the cable channel behind the thumb screws. Guide the hotend thermistor cable through the channel first. Then insert the hotend heater cable.
- Guide the hotend fan cable as seen in the picture. Push it in the cable channel.

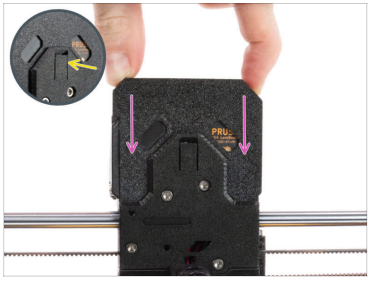
STEP 17 Arranging the cables

- Close the fan-door.
- Arrange all the cables according to the picture. All cables must be squeezed as close to the extruder body as possible so as not to interfere with the cover in the next step.

STEP 18 Covering the LoveBoard





- Slide the Loveboard-cover on the extruder. And push it down.

⚠ **Be careful not to pinch any cables!**

- When the cover is properly and completely inserted, you will feel a slight "click" of the rear latch.

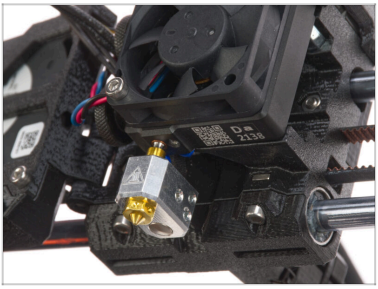
STEP 19 Nozzle Setup

- Navigate to ***Settings -> Hardware -> Printhead***
  - Set the **Nozzle Diameter** you are using.
  - If you're using a **Hardened** steel nozzle, set this option to ON.
  - Set the ***Nozzle High-flow*** and ***Silicone Sock*** options to on, if you have installed these components.
  - If you have the **MMU3**-modified extruder, set the ***Nextruder*** option to *[MMU]*

STEP 20 Final check

- To check if everything is connected correctly go to **Control > Temperature > Nozzle Temperature** and set it to a temperature above 200°C.
- Go back to the main screen and check the bottom bar to see if the temperature rises.

STEP 21 That's it!



- **Great job!** You just successfully replaced the Prusa Nozzle on your Original Prusa MK4.

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